

Indiana Business and Information Technology

Middle School Standards

Indiana State Board of Education Rule: Middle school students are to receive instruction every year in a minimum of two of the following program areas: Agriculture, Business, Family and Consumer Sciences, and Technology Education (Industrial Technology). Based on this rule, several broad areas of Business content have been developed for integration into the Business program offered through the Indiana Business and Information Technology Middle School Curriculum. This content focuses on the needs of middle school students (sixth through eighth grades).

Introduction

Serving the needs of early adolescents is the primary purpose of the middle school curriculum. Middle school students are concerned about determining their own unique identity, exploring a variety of interests, developing skills for working in peer groups and with adults, understanding and dealing with the world they are experiencing, connecting classroom learning with practical applications, and forming expectations for the future. Tools that students need for addressing these concerns include reading comprehension, writing and math skills, critical thinking skills, and computer literacy. In addition, middle school students need content that relates their personal change to choices they must make in the social and economic world. Business content provides a context in which students can learn more about themselves and how they relate to others and to their future in a world that is driven by business activity. In addition, the proficiencies achieved can be used effectively throughout their secondary and higher education curricula and in the workplace.

Economic survival in the 21st Century demands that students know and understand both basic and technical concepts of business as well as possess the ability to apply these concepts in a variety of settings. An education in business is critical to the fulfillment of virtually all career aspirations. There is a clear relationship between business concepts and the student expectations set forth in Indiana's Academic Standards for grades six through eight. The Standards require the application of computer and information processing skills in creating, proofreading, and editing written material. Also, locating appropriate reference resources and displaying and interpreting data are part of the reading and writing focus of the middle school. Business content in career exploration, personal finance/economics, and business ownership/management helps students develop problem-solving and decision-making competencies in realistic settings.

Middle school provides students with the stability they need while they are preparing for transition into high school and beyond. Today's global society challenges the talents and imagination of Indiana's diverse student population. Today, as never before, students face an environment that demands creative, innovative solutions to problems and that presents exciting opportunities for the future.

The Indiana Business and Information Technology Middle School Curriculum provides concepts and applications that facilitate the development of competencies required for success in all academic areas and in real-world contexts. This curriculum relates closely to understandings and competencies students will need as their world expands and as they develop career interests. The four broad areas included in this curriculum are technology, career exploration, personal finance/economics, and business ownership/management. The

performance expectations and instructional strategies for each area provide many opportunities to engage students in learning and applying technology as a tool. This approach is in keeping with the NETS (National Educational Technology Standards) approach, which places heavy emphasis on integrating technology into the curriculum. The No Child Left Behind (NCLB) legislation mandates that students reach technological proficiency by the completion of the eighth grade.

Each of the four curriculum areas is described below. The specific topics included, which can vary in length, provide opportunities for students to explore curriculum areas and develop knowledge and skills needed in conjunction with other middle school curriculum areas. Student achievement of the technology standards will allow teachers in other content areas to focus on the application of these competencies in meeting the standards specific to their academic areas. These four curriculum areas provide a basis on which students can make decisions regarding their future educational and employment endeavors, as well as prepare them to conduct personal business activities.

It is imperative to understand that this entire middle school curriculum (Technology, Career Exploration, Personal Finance/Economics, and Business Ownership/Management) cannot be attained in just one exploration or one rotation class in a semester, trimester, or block program of studies. It is a sequential program (technology first, then other content areas) and developmental program of study. Students should progress on the basis of the number of weeks available for business content instruction in their middle school curriculum. The Career Planning and Success Skills and the Digital Communications Tools courses may be taught in the Indiana Business and Information Technology Middle School Curriculum. If the standards for these courses are met, students may receive high school credit.

Proficiencies for the areas of Career Exploration, Personal Finance/Economics, and Business Ownership/Management are listed on the following pages. These proficiencies were adapted from those listed for Level 1 (grades K-6) and Level 2 (grades 6-9) in the *National Standards for Business Education—What America's Students Should Know and Be Able To Do in Business, 2001*. ***Many of these concepts should be integrated into the materials used for developing technology proficiencies.***

There is no sequential order to the proficiencies listed. However, some items require a prerequisite knowledge of other items. These standards identify what students need to know and be able to do at the end of their middle school program. The specific grade level at which proficiencies are introduced depends on the individual school corporation and the amount of time that is available for business instruction. It is ***strongly recommended*** that, in addition to technology proficiencies, those proficiencies related closely to personal financial management be given a high priority.

The document ***Indiana K-8 Curriculum Development Guidelines for Business and Information Technology Focusing on Keyboarding and the Middle School*** includes grids, which display the Content Standards, Performance Expectations, Instructional Strategies, Assessment Strategies, and Supplementary Resources for the middle school curriculum. The curriculum grid for each of the four Middle School Business and Information Technology Proficiency areas includes the Indiana Academic Standards addressed in the Instructional Strategies for each content standard. A complete list of the Indiana Academic Standards the Middle School Business and Information Technology curriculum addresses is included at the end of the document.

Technology Proficiencies

In the Technology area, students will learn touch keyboarding and several other input methods. Students will explore the following components of the technology area: basic operations and concepts of technology systems; social, ethical, and human issues; productivity, communications, research, and problem-solving/decision-making tools; and technology as an assessment tool. The overall objective in this curriculum area is to enable students to meet the No Child Left Behind legislation that requires technological literacy for all students by the completion of grade 8. The National Educational Technology Standards (NETS) developed by the International Society for Technology Education (ISTE) were used by the North Central Regional Technology in Education Consortium at Learning Point Associates to develop proficiencies (Technology Literacy Proficiency Checklist for K-8 Students, 2003) for student technological literacy. An adaptation of these proficiencies was used for the performance expectations in the Technology curriculum area. The Indiana Academic Standards addressed through the Instructional Strategies developed for each content standard are listed in the curriculum grid, which is included in the document—*Indiana K-8 Curriculum Development Guidelines for Business and Information Technology Focusing on Keyboarding and the Middle School*.

Content Standards and Performance Expectations

BMS-T 1 Technology Operation Skills

BMS-T 1.1 Content Standard: Students use hardware and software components and understand the difference between input and output devices.

Performance Expectations

- BMS-T 1.1.1** Use hardware and peripherals (input and output devices) to support content area learning including the use of touch screens and simple speech-recognition systems.
- BMS-T 1.1.2** Demonstrate effective keyboarding techniques.
- BMS-T 1.1.2.1** Demonstrate correct home keys hand position and keystroking.
- BMS-T 1.1.2.2** Demonstrate appropriate technique for special purpose keys, including the space bar, tab key, shift keys, backspace key, delete key, and enter key.
- BMS-T 1.1.2.3** Demonstrate correct reaches to and keying of alphabetic keys.
- BMS-T 1.1.2.4** Demonstrate correct arm/hand positions and correct body posture.
- BMS-T 1.1.2.5** Demonstrate increasing speed proficiency so that **a minimum of 30 words a minute (D grade level)** with no more than 2 errors per minute is achieved by grade 8.
- BMS-T 1.1.2.6** Demonstrate improvement in keyboarding proficiency (speed and accuracy) through appropriate pedagogy.
- BMS-T 1.1.3** Connect to the Internet using school network/modem and browser.
- BMS-T 1.1.4** Use still imaging with digital cameras.
- BMS-T 1.1.5** Use video imaging with digital cameras.
- BMS-T 1.1.6** Use an array of media and appropriate cabling to support academic work.
- BMS-T 1.1.7** Use PDAs or other hand-held devices.
- BMS-T 1.1.8** Use scanners.
- BMS-T 1.1.9** Use mouse, keyboard, touch screen, stylus pen, and/or speech (input devices) to input information.
- BMS-T 1.1.10** Use monitor, printer, and/or speakers (output devices) to review information.

- BMS-T 1.1.11** Use the icon/GUI (graphical user interface) of the operating system to launch and operate software.
- BMS-T 1.1.12** Use the GUI of the operating system to save and back up files to a hard drive, other drives, or a server.
- BMS-T 1.1.13** Use the GUI of the operating system with application software (e.g., databases, spreadsheets, word processing, or educational software) to import images, text, and video/sound. See specific Productivity Tools, BMS-T 4.)
- BMS-T 1.1.14** Use the GUI of the operating system to organize electronic files.
- BMS-T 1.1.15** Evaluate and select appropriate innovative technologies (hand-held devices) to match the needs of tasks.

BMS-T 2 Technology Conceptualization Skills

- BMS-T 2.1 Content Standard:** Students demonstrate a comprehensive understanding of the interactivity and operation of technology systems.

Performance Expectations

- BMS-T 2.1.1** Explain the functional relationship between basic hardware and software systems and their components.
- BMS-T 2.1.2** Explain the use of and the necessity for input and output devices.
- BMS-T 2.1.3** Explain the organizational concept behind using files and folders for storing information and organizing files into folders.
- BMS-T 2.1.4** Explain the purpose and necessity of saving documents as files and save documents as files.
- BMS-T 2.1.5** Use technology terminology appropriately to describe the basic relationships among input, processing, and output functions.
- BMS-T 2.1.6** Explain the functions of the central processing unit, motherboard, etc.
- BMS-T 2.1.7** Explain the purposes of the GUI (beyond launching software applications).
- BMS-T 2.1.8** Explain the use of and the difference between temporary memory (RAM), permanent memory (ROM), and storage (e.g., digital storage on hard, flash, external, floppy, and zip disks/drives; magnetic tape; and CD/DVD optical storage).
- BMS-T 2.1.9** Identify and discuss the variety of technologies used in society.

BMS-T 3 Social and Ethical Issues of Technology

- BMS-T 3.1 Content Standard:** Students understand the social, legal, and ethical issues related to technology use. Students practice responsible use of hardware, software, and data. Students interact positively with technology independently and in collaboration with others.

Performance Expectations

- BMS-T 3.1.1** Practice respectful and responsible use of technology through abiding by the school technology and Internet use policy.
- BMS-T 3.1.2** Use technology independently and collaboratively.
- BMS-T 3.1.3** Demonstrate an understanding of plagiarism and fair use; respect copyright laws of information producers such as authors and artists.
- BMS-T 3.1.4** Demonstrate an understanding of the interaction and interdependence between humans and technology.
- BMS-T 3.1.5** Explain how changes in technology affect the workplace and society.

BMS-T-4 Technology as a Productivity Tool

BMS-T.4.1 Content Standard: Students use technology as a tool to enhance learning and creativity. Students are able to use technology to increase productivity in developing models, publications, and other creative works.

Performance Expectations

- BMS-T 4.1.1** Demonstrate word processing skills by using correct keyboarding techniques.
- BMS-T 4.1.2** Demonstrate word processing skills by creating a variety of documents.
- BMS-T 4.1.3** Demonstrate word processing skills by saving and printing documents.
- BMS-T 4.1.4** Demonstrate word processing skills by accessing and editing previously created documents, including the effective use of editing commands (e.g., delete and cut/copy/paste).
- BMS-T 4.1.5** Demonstrate word processing skills by using spell check, thesaurus, and grammar features at a grade-appropriate level.
- BMS-T 4.1.6** Demonstrate word processing skills by using appropriate software to create outlines for papers.
- BMS-T 4.1.7** Demonstrate word processing skills by using software to cite references.
- BMS-T 4.1.8** Demonstrate the ability to format a variety of documents that meet employability standards.
- BMS-T 4.1.9** Demonstrate spreadsheet skills by creating worksheets and charts.
- BMS-T 4.1.10** Demonstrate spreadsheet skills by saving and printing files.
- BMS-T 4.1.11** Demonstrate spreadsheet skills by accessing and retrieving data.
- BMS-T 4.1.12** Demonstrate spreadsheet skills by organizing and analyzing data.
- BMS-T 4.1.13** Demonstrate database skills by creating simple database files.
- BMS-T 4.1.14** Demonstrate database skills by saving and printing files.
- BMS-T 4.1.15** Demonstrate database skills by accessing and retrieving data.
- BMS-T 4.1.16** Demonstrate database skills by organizing and analyzing data.
- BMS-T 4.1.17** Demonstrate multimedia skills (including desktop publishing) through the use of paint, draw, text, or sound to create simple visual aids.
- BMS-T 4.1.18** Demonstrate presentation skills through the use of presentation software to create well-organized, informative slide presentations.
- BMS-T 4.1.19** Demonstrate presentation software skills by saving and printing files.
- BMS-T 4.1.20** Demonstrate presentation software skills through the use of basic design guidelines to enhance visual presentations.
- BMS-T 4.1.21** Log on to preselected Internet sites and view information.
- BMS-T 4.1.22** Demonstrate the ability to use Internet search engines to access information by identifying and conducting searches using Internet/intranet search engines and directories.
- BMS-T 4.1.23** Demonstrate the ability to use Web browser functions to access information by bookmarking/creating favorites.
- BMS-T 4.1.24** Demonstrate telecommunications skills through the use of e-mail to contact peers, teachers, and other audiences.
- BMS-T 4.1.25** Demonstrate the ability to develop a simple Web page designed (software driven) to convey information about a specific academic content area topic.
- BMS-T 4.1.26** Use software or online help features of application programs to support product use.
- BMS-T 4.1.27** Demonstrate the ability to select appropriate software for completing a variety of projects.
- BMS-T 4.1.28** Demonstrate the ability to follow instructions (instructor, text, manuals, and/or screen).
- BMS-T 4.1.29** Demonstrate the ability to work independently and as a team member (includes efficient use of time, organization of work, etc.).

- BMS-T 4.1.30** Demonstrate appropriate conduct in the classroom.
BMS-T 4.1.31 Demonstrate appropriate handling and use of supplies.

BMS-T 5 Technology as a Communication Tool

- BMS-T 5.1 Content Standard:** Students use telecommunications to collaborate, publish, and interact with peers, teachers, and other audiences. Students use a variety of technologies to convey information such as e-mail, e-learning, video conferencing, and telephony.

Performance Expectations

- BMS-T 5.1.1** Demonstrate telecommunications skills by collaborating and communicating effectively (using e-mail, instant messaging, blogging, chat, net meetings, etc.) with peers, teachers, and other audiences.
BMS-T 5.1.2 Use technology to plan, develop, and present key concepts to different types of audiences.
BMS-T 5.1.3 Select appropriate presentation formats (e.g., paper, Web page, multimedia presentation, speech, or hypermedia).

BMS-T 6 Technology as an Information Research Tool

- BMS-T 6.1 Content Standard:** Students use technology to access, review, evaluate, and select information from multiple resources for reporting purposes. Students write appropriate research reports.

Performance Expectations

- BMS-T 6.1.1** Use technology to conduct research for specific problems or questions that need to be resolved.
BMS-T 6.1.2 Use technology to conduct research by using common electronic reference resources to access information such as almanacs, encyclopedias, indexes, online specialized databases, and online catalogs.
BMS-T 6.1.3 Evaluate and select appropriate sources of information (print, nonprint, video, electronic, and human) for a specific research problem or question.
BMS-T 6.1.4 Evaluate and select several resources from a variety of information sources by reviewing each author's credentials, perspective, or bias; validate the accuracy of information.
BMS-T 6.1.5 Evaluate and select several resources from a variety of information sources based on the audience.
BMS-T 6.1.6 Use technology to conduct searches by using basic search techniques (e.g., subject, author, title, and keyword) to locate required information on Internet/intranet search engines.
BMS-T 6.1.7 Use technology to conduct searches by using Boolean operators, independently or with guidance, to locate information.
BMS-T 6.1.8 Use technology to conduct searches by using sophisticated reference tools such as biographical dictionaries and thesauri in print and electronic formats.
BMS-T 6.1.9 Evaluate and select several resources from a variety of information sources by using new information. (As information is integrated with prior knowledge, *new* information is attained.)

BMS-T 7 Technology as a Problem-Solving and Data-Driven Decision-Making Tool

BMS-T 7.1 Content Standard: Students use technology to develop strategies for solving problems.

Performance Expectations

BMS-T 7.1.1 Use technology to solve problems and make informed decisions.

BMS-T 7.1.2 Use appropriate tools (e.g., spreadsheets) to analyze a problem from different perspectives.

BMS-T 7.1.3 Use appropriate simulation software tools (e.g., Lemonade Stand and Stock Market) to analyze a problem from different perspectives.

BMS-T 7.1.4 Use appropriate simulation software tools to review the outcomes of a problem scenario over time.

BMS-T 8 Technology as an Assessment Tool

BMS-T 8.1 Content Standard: Students use technology to take developmentally appropriate tests utilizing audio and/or visual feedback when necessary.

Performance Expectations

BMS-T 8.1.1 Take computer-adaptive timed multiple choice or true/false tests.

BMS-T 8.1.2 Take computer-based narrative tests.

BMS-T 8.1.3 Take computer-based tests for topic remediation and support, and use feedback appropriately for self-assessment.

Career Exploration Proficiencies

In the Career Exploration area, students will explore their interests, identify the types of things they do well, and determine what they want and expect for their future with regard to their total lifestyle (education, occupation, social responsibility, and leisure activities). Students begin career exploration at an early age; they gain a developmental understanding of their own strengths and weaknesses, the ever-evolving requirement of the workplace, and the relationship of lifelong learning to career success. Students will explore multiple career paths and their interrelatedness. They will become acquainted with the array of careers available and explore educational and personal requirements for various job clusters. This awareness is important because frequent career changes are common in the 21st Century. New career fields, job clusters, and expansion of student awareness of career possibilities are emphasized. The National Business Education Association (NBEA) standards were used to develop performance expectations in the Career Exploration curriculum area. The proficiencies for each of the five subdivisions of this area are presented below. The Indiana Academic Standards addressed through the Instructional Strategies developed for each content standard are listed in the curriculum grid, which is included in the document—*Indiana K-8 Curriculum Development Guidelines for Business and Information Technology Focusing on Keyboarding and the Middle School*.

Content Standards and Performance Expectations

BMS-CE 1 Self-Awareness

BMS-CE 1.1 Content Standard: Students assess personal skills, abilities and aptitudes, and personal strengths and weaknesses as they relate to career exploration.

Performance Expectations

BMS-CE 1.1.1 Identify personal likes and dislikes, strengths and weaknesses, and individual talents.

BMS-CE 1.1.2 Assess and analyze strengths and weaknesses relative to a variety of career areas involving data, people, and/or things.

BMS-CE 1.1.3 Formulate and implement a plan to address identified weaknesses.

BMS-CE 2 Career Research

BMS-CE 2.1 Content Standard: Students use print, electronic, and oral career resources to develop a foundation of personal career data.

Performance Expectations

BMS-CE 2.1.1 Identify and describe careers of family members and/or friends.

BMS-CE 2.1.2 Describe and give examples of career clusters; develop an awareness of occupational opportunities; recognize the advantages of early career exploration and planning.

BMS-CE 2.1.3 List and describe the contributions of various types of occupations in the community (e.g., banker, realtor, police officer, teacher, business manager, and firefighter) and describe career opportunities in these professional fields.

BMS-CE 2.1.4 Use a variety of research tools (e.g., computer-assisted programs, newspapers, books, professional and trade associations, informational interviews, job shadowing, career fairs, field trips, speakers, case studies, community service, and the Internet) in the career-exploration process.

BMS-CE 2.1.5 Use a questionnaire to guide a career exploration interview to determine educational requirements, starting salaries, and career-ladder opportunities.

- BMS-CE 2.1.6** Explain the concept of transferable skills within and between career clusters.
- BMS-CE 2.1.7** Evaluate several occupational interests, based on various criteria (e.g., educational requirements, starting salaries, trends, opportunities, and career ladders).
- BMS-CE 2.1.8** Use available resources to research career opportunities and trends; prepare a research report.
- BMS-CE 2.1.9** Describe the impact of the global economy on jobs and careers.
- BMS-CE 2.1.10** Recognize products associated with other countries and the occupations related to them.
- BMS-CE 2.1.11** Relate career interests to opportunities in the global economy.
- BMS-CE 2.1.12** Describe the culture of a particular country and discuss the available career choices in that culture.

BMS-CE 3 Workplace Expectations and School-To-Career Transition

- BMS-CE 3.1 Content Standard:** Students relate the importance of workplace expectations to career development.

Performance Expectations

- BMS-CE 3.1.1** Discuss the personal qualities and ethical and/or responsible behaviors related to school, home, and employability (e.g., promptness, ability to get along with others, a positive attitude, confidentiality, tolerance, flexibility, dependability, honesty, integrity, willingness to ask questions, respect for diversity, patience, cooperation, respect for personal property, completion of homework assignments, and communication skills); and describe how these qualities and behaviors influence the feelings and actions of others.
- BMS-CE 3.1.2** Demonstrate proper etiquette for meeting and greeting people and appropriate social skills for school and the workplace.
- BMS-CE 3.1.3** Explain the importance of personal appearance, grooming, and other school and workplace expectations.
- BMS-CE 3.1.4** Discuss the importance of a job well done to personal satisfaction and to the home and business communities.
- BMS-CE 3.1.5** Discuss the importance of being able to work productively with people who are different from oneself.
- BMS-CE 3.1.6** Describe how physical, intellectual, and cultural diversity can strengthen school and workplace effectiveness.
- BMS-CE 3.1.7** Identify the changing roles of men and women in the workplace and the family; discuss the advantages and disadvantages of entering nontraditional occupations.
- BMS-CE 3.1.8** Identify stereotypes, biases, and discriminatory behaviors that may impact opportunities for women and men in certain occupations.
- BMS-CE 3.1.9** Describe different cultural behaviors and expectations and discuss the effects of personal beliefs, attitudes, and cultural practices on decision making.
- BMS-CE 3.1.10** Demonstrate the steps involved in handling conflict.
- BMS-CE 3.1.11** Demonstrate the steps involved in dealing with stress.
- BMS-CE 3.1.12** Discuss how environmental barriers may affect the physically challenged.
- BMS-CE 3.1.13** Demonstrate good listening skills and describe their importance to school and workplace expectations.
- BMS-CE 3.1.14** Express thoughts and ideas succinctly and correctly using various forms of communication (e.g., oral, written, and nonverbal).
- BMS-CE 3.1.15** Identify ways to use feedback to improve workplace skills.
- BMS-CE 3.1.16** Explain the importance of planning; identify and implement the steps for planning school projects.

BMS-CE-4 Career Strategy

BMS-CE 4.1 Content Standard: Students apply knowledge gained from individual assessment to a comprehensive set of goals and an individual career plan.

Performance Expectations

- BMS-CE 4.1.1** Describe how the skills and knowledge acquired in school relate to various occupations.
- BMS-CE 4.1.2** Describe the relationship of assessed interests, aptitudes, and abilities to academic and occupational skills.
- BMS-CE 4.1.3** Apply career goals, skills, and interests to the selection of high school courses.
- BMS-CE 4.1.4** Explain how career decisions impact education, leisure activities, lifestyle, and other major life decisions.
- BMS-CE 4.1.5** Discuss methods of “bouncing back” after a setback or failure.
- BMS-CE 4.1.6** Identify personal goals that may be achieved through a combination of career, community, social, and family roles.
- BMS-CE 4.1.7** Explain the importance of career planning; apply steps in the decision-making process to establish short- and long-term career goals.
- BMS-CE 4.1.8** Evaluate consequences of decisions pertaining to short- and long-term career goals.
- BMS-CE 4.1.9** Identify obstacles to achieving career goals.
- BMS-CE 4.1.10** Describe how career development is a continuous process involving a series of choices.
- BMS-CE 4.1.11** Determine how the expectations of others affect career goals.
- BMS-CE 4.1.12** Create a career plan that includes the investigation of career clusters, self-assessment, research, career alternatives, and high school course options.

BMS-CE 5 Lifelong Learning

BMS-CE 5-1 Content Standard: Students relate the importance of lifelong learning to career success and recognize that each of the following proficiencies must be continually updated.

Performance Expectations

- BMS-CE 5.1.1** Develop an awareness of changing and emerging jobs and careers.
- BMS-CE 5.1.2** Relate various levels of education to careers.
- BMS-CE 5.1.3** Relate the importance of education to meeting identified goals.
- BMS-CE 5.1.4** Analyze school/work evaluations to assess strengths, weaknesses, and areas for improvement.
- BMS-CE 5.1.5** Describe the importance of effective study habits, test-taking skills, and learning skills.
- BMS-CE 5.1.6** Describe how good health, nutrition, and physical fitness habits contribute to career success.

Personal Finance/Economics Proficiencies

In the Personal Finance/Economics area, students will develop knowledge and skills for personal financial management. The problem-solving approach used is fundamental to students developing life skills in the areas of income and money management, spending and credit, and saving and investing. The NBEA standards (www.nbea.org) and the Jump\$tart (www.jumpstart.org) standards were used to develop performance expectations in the personal finance/economics curriculum area. In addition, appropriate middle school skills were selected from the Networks Personal Financial Literacy Skills list developed by the Networks Financial Institute (www.networksfinancialinstitute.org). The proficiencies for each subdivision of this area are presented below. The Indiana Academic Standards addressed through the Instructional Strategies developed for each content standard are listed in the curriculum grid, which is included in the document—*Indiana K-8 Curriculum Development Guidelines for Business and Information Technology Focusing on Keyboarding and the Middle School*.

Content Standards and Performance Expectations

BMS-PFE 1 Personal Finance/Economic Decision Making

BMS-PFE 1.1 Content Standard: Students use a rational decision-making process that recognizes opportunity costs and trade-offs involved in making choices

Performance Expectations

- BMS-PFE 1.1.1** Define and give examples of economic wants and needs.
- BMS-PFE 1.1.2** Apply opportunity costs and trade-offs to personal decision making.
- BMS-PFE 1.1.3** Recognize and assume responsibility for the consequences of economic choices.
- BMS-PFE 1.1.4** Apply the steps in a rational decision-making process to a situation involving an individual making an economic decision.
- BMS-PFE 1.1.5** Explain how types and availability of jobs are determined primarily by consumer demand in the market-oriented economy of the United States.
- BMS-PFE 1.1.6** Identify various ways people earn a living.
- BMS-PFE 1.1.7** Discuss how personal choices, experiences, technology, education/training, and other factors correlate with earning a living.
- BMS-PFE 1.1.8** Analyze the characteristics and requirements of occupations of interest, including entrepreneurial opportunities.
- BMS-PFE 1.1.9** Differentiate between earned and unearned income; identify sources of unearned income.
- BMS-PFE 1.1.10** Distinguish between income and wealth.
- BMS-PFE 1.1.11** Differentiate between gross and net income.
- BMS-PFE 1.1.12** Explain how insurance protects income.
- BMS-PFE 1.1.13** Explain the concept of taxes and how taxes affect purchasing power; identify the types of taxes individuals commonly incur.
- BMS-PFE 1.1.14** Explain the concept of inflation; how inflation affects purchasing power; and the effect of other economic conditions on financial planning.

BMS-PFE-2 Money Management

BMS-PFE-2.1 Content Standard: Students analyze various forms of income and the factors related to income management.

Performance Expectations

- BMS-PFE 2.1.1** Identify ways in which individuals and families obtain financial resources; explain the role of assets in borrowing.
- BMS-PFE 2.1.2** Illustrate ways people are financially responsible; explain how good money management helps avoid bankruptcy.
- BMS-PFE 2.1.3** Analyze the present and future consequences of personal financial choices.
- BMS-PFE 2.1.4** Define fixed, variable, and periodic expenses.
- BMS-PFE 2.1.5** Explain the concept of discretionary income.
- BMS-PFE 2.1.6** Explain the role of insurance in money management.
- BMS-PFE 2.1.7** Construct and use a personal budget (spending/savings plan), and evaluate it according to short-, intermediate-, and long-term goals.

BMS-PFE 3 Spending and Credit

BMS-PFE 3.1 Content Standard: Students apply a decision-making process to maximize satisfaction in purchasing and paying for products and services.

Performance Expectations

- BMS-PFE 3.1.1** Apply a rational decision-making process to personal buying decisions.
- BMS-PFE 3.1.2** Identify goods and services and distinguish between buying goods and buying services.
- BMS-PFE 3.1.3** Identify alternative sources for purchases (e.g., Internet, retail stores, and catalogs).
- BMS-PFE 3.1.4** Apply comparison shopping practices; analyze advertising claims; explain the concept of impulse buying.
- BMS-PFE 3.1.5** Discuss various ways competition helps the consumer.
- BMS-PFE 3.1.6** Describe reasons why there are variances in price for a given item bought from different providers.
- BMS-PFE 3.1.7** Compare advantages/disadvantages of buying-decision alternatives, including mortgages, loans, leasing, and rent-to-own.
- BMS-PFE 3.1.8** Explain how interest rates affect buying decisions.
- BMS-PFE 3.1.9** Use reliable consumer resources to collect information for making buying decisions about durable and nondurable goods.
- BMS-PFE 3.1.10** Identify laws and agencies that are available to protect the rights of the consumer; explain consumer responsibilities.
- BMS-PFE 3.1.11** Contrast different methods of payment including cash, checks, debit cards, and credit cards; explain which of these is “borrowing.”
- BMS-PFE 3.1.12** Discuss the steps involved in opening and using a checking account.
- BMS-PFE 3.1.13** Compare and contrast the different types of checking accounts offered by various financial institutions.
- BMS-PFE 3.1.14** Compare electronic means of transfer (e.g., debit cards, ATM, and automatic deposits/payments) offered by various financial institutions and describe why there are various means of transferring funds.
- BMS-PFE 3.1.15** Identify the rights and responsibilities associated with using a checking account.
- BMS-PFE 3.1.16** Discuss the advantages and disadvantages of e-banking.
- BMS-PFE 3.1.17** Analyze privacy and security issues associated with financial transactions.

- BMS-PFE 3.1.18** Explain what credit is; explain what creditors look for in issuing credit (character, capacity, capital, conditions, and collateral); explain the use of credit reports.
- BMS-PFE 3.1.19** Identify methods of establishing and maintaining a good credit rating; explain ways to avoid or correct problems; explain the consequences of living beyond one's means; explain the consequences of late debt payments.
- BMS-PFE 3.1.20** Identify the factors that affect the cost of credit (principal, time, and interest rate) and explain how these factors are interrelated; calculate finance charges.
- BMS-PFE 3.1.21** Explain why the interest rate varies with the amount of assumed risk.
- BMS-PFE 3.1.22** Describe the risks and responsibilities associated with using credit and how to gain protection against the consequences of risk (credit risks and other risks in life).
- BMS-PFE 3.1.23** Identify the opportunity cost of credit.
- BMS-PFE 3.1.24** Identify the various types of credit including the different types of credit cards.
- BMS-PFE 3.1.25** Explain the effects of debt collection through a collection agency or court judgment on one's credit rating.
- BMS-PFE 3.1.26** Explain identity theft and its potential impact on credit.

BMS-PFE 4 Saving and Investing

- BMS-PFE 4.1 Content Standard:** Students evaluate saving and investing options to make short-, intermediate-, and long-term goals.

Performance Expectations

- BMS-PFE 4.1.1** Define savings; compare saving to the concept of Social Security.
- BMS-PFE 4.1.2** Define why and how people save; explain the concept of planning for emergencies.
- BMS-PFE 4.1.3** Identify the opportunity cost of saving.
- BMS-PFE 4.1.4** Explain the difference between earning interest and paying interest.
- BMS-PFE 4.1.5** Distinguish between simple and compound interest..
- BMS-PFE 4.1.6** Analyze the power of compounding and the importance of starting early in implementing a plan of saving and investing.
- BMS-PFE 4.1.7** Explain various options (advantages and disadvantages) for saving, including "piggy banks," credit unions, and other financial institutions.
- BMS-PFE 4.1.8** Compare/contrast saving and investing (identify the risk/return trade-offs).
- BMS-PFE 4.1.9** Discuss the advantages and disadvantages of various options for investing to meet short-, intermediate-, and long-term goals; explain liquidity, risk, and return for various alternatives.
- BMS-PFE 4.1.10** Evaluate sources of investment information.
- BMS-PFE 4.1.11** Explain how different factors affect the rate of return on investment.
- BMS-PFE 4.1.12** Describe how to buy and sell investments; explain how agencies that regulate financial markets protect investors.

Business Ownership/Management Proficiencies

In the Business Ownership/Management area, students will learn about business ownership and management, including entrepreneurship. The performance expectations for this area were selected from the NBEA standards. Students will have opportunities to explore the role of business firms in our economic system and the personal and educational requirements needed to succeed in the areas of business ownership/management and entrepreneurship. The proficiencies (performance expectations) for this area were selected from the NBEA standards. The proficiencies for each of the three subdivisions in this area are presented below. The Indiana Academic Standards addressed through the Instructional Strategies developed for each content standard are listed in the curriculum grid, which is included in the document—*Indiana K-8 Curriculum Development Guidelines for Business and Information Technology Focusing on Keyboarding and the Middle School*.

Many of the performance expectations for this area can be achieved through the instructional strategies for the Technology, Career Exploration, and Personal Finance/Economics areas. This curriculum area does not have comprehensive coverage in the middle school curriculum. At the middle school level, the purpose of the Business Ownership/Management section is to help students explore subject matter they may wish to study further in high school or college.

Content Standards and Performance Expectations

BMS-BOM 1 Fundamental Business Ownership/Management Knowledge and Skills

BMS-BOM 1.1 Content Standard: Students analyze concepts that serve as the foundation for the study of management and other business activities.

Performance Expectations

- BMS-BOM 1.1.1** Identify skills and qualities needed for specific jobs and careers.
- BMS-BOM 1.1.2** Describe the differences between an employer and an employee.
- BMS-BOM 1.1.3** Identify the characteristics of a good employee.
- BMS-BOM 1.1.4** Describe the characteristics of a good employer/manager.
- BMS-BOM 1.1.5** Explain the importance of organizing.
- BMS-BOM 1.1.6** Describe the importance of planning.
- BMS-BOM 1.1.7** Discuss the importance of time management.
- BMS-BOM 1.1.8** Define and explain the importance of leadership.
- BMS-BOM 1.1.9** Identify leaders and leadership qualities.
- BMS-BOM 1.1.10** Describe the advantages of working as a team in a specific activity.
- BMS-BOM 1.1.11** Identify the advantages and disadvantages of the team concept to an organization.
- BMS-BOM 1.1.12** Describe and give examples of the characteristics of successful teams.
- BMS-BOM 1.1.13** Explain the importance of motivation, leadership, and trust to members of a team.
- BMS-BOM 1.1.14** Explain the importance of clear communication to members of a team.
- BMS-BOM 1.1.15** Describe a personal code of ethical behavior.
- BMS-BOM 1.1.16** Demonstrate ethical behavior in small-group situations.

BMS-BOM 2 Forms of Business Ownership

BMS-BOM 2.1 Content Standard: Students assess the characteristics of various types of business ownership.

Performance Expectations

- BMS-BOM 2.1.1** Identify and provide examples of the major forms of business ownership (sole proprietorship, partnership, and corporation).
- BMS-BOM 2.1.2** Identify the differences between a sole proprietorship and a partnership.
- BMS-BOM 2.1.3** Define a corporation and explain how it differs from a sole proprietorship and a partnership.
- BMS-BOM 2.1.4** Describe and give examples of special types of business ownership (e.g., franchises, cooperatives, and S corporations).

BMS-BOM 3 Entrepreneurship

BMS-BOM 3.1 Content Standard: Students assess the characteristics of entrepreneurial opportunities and analyze the roles and responsibilities of entrepreneurs.

Performance Expectations

- BMS-BOM 3.1.1** Identify the characteristics of successful entrepreneurs.
- BMS-BOM 3.1.2** Describe opportunities that led to the development of successful entrepreneurial endeavors.
- BMS-BOM 3.1.3** Identify one's own personal traits that are typical characteristics of an entrepreneur.
- BMS-BOM 3.1.4** Compare the costs and benefits of choosing to become an entrepreneur.
- BMS-BOM 3.1.5** Differentiate between a manager and an entrepreneur.
- BMS-BOM 3.1.6** Define ethics and identify common ethical issues that entrepreneurs encounter.

BMS-BOM 4 Basic Functions of Management and Marketing

BMS-BOM 4.1 Content Standard: Students analyze management and marketing functions and their implementation and integration in the business environment.

Performance Expectations

- BMS-BOM 4.1.1** Determine the wants of consumers for specific products at various price levels.
- BMS-BOM 4.1.2** Define and give examples of target markets for specific products.
- BMS-BOM 4.1.3** Identify and discuss the elements of marketing (e.g., product, place, price, and promotion).
- BMS-BOM 4.1.4** Design/select products to meet customer wants.
- BMS-BOM 4.1.5** Identify the resources needed to produce a specific product.
- BMS-BOM 4.1.6** Create promotional advertising/activities for a given product/service.
- BMS-BOM 4.1.7** Discuss the impact of competition on keeping/increasing market share.
- BMS-BOM 4.1.8** Identify ways businesses compete (e.g., quality, service, status, and price).
- BMS-BOM 4.1.9** Describe techniques for obtaining customer feedback.
- BMS-BOM 4.1.10** Discuss the importance of responding to customer concerns.
- BMS-BOM 4.1.11** Identify ways to respond to customer concerns.
- BMS-BOM 4.1.12** Explain the importance of ethical standards in conducting business.
- BMS-BOM 4.1.13** Discuss examples of honest and dishonest business practices.
- BMS-BOM 4.1.14** Identify the reasons for keeping business records.

- BMS-BOM 4.1.15** Describe problems that might be caused by failure to keep business records.
- BMS-BOM 4.1.16** Describe why businesses must plan.
- BMS-BOM 4.1.17** Develop a plan for a specific event.
- BMS-BOM 4.1.18** Describe and apply the steps in the decision-making process.
- BMS-BOM 4.1.19** Discuss the importance of a business giving back to the community.

Indiana's Academic Standards Integrated into the Middle School Business and Information Technology Curriculum

English/Language Arts

Grade 6

Standard 2

READING: Comprehension (Focus on Informational Materials)

- 6.2.1 Identify the structural features of popular media (newspapers, magazines, online information) and use the features to obtain information.
- 6.2.2 Analyze text that uses a compare-and-contrast organizational pattern.
- 6.2.3 Connect and clarify main ideas by identifying their relationships to multiple sources and related topics.
- 6.2.4 Clarify an understanding of texts by creating outlines, notes, diagrams, summaries, or reports.
- 6.2.7 Make reasonable statements and conclusions about a text, supporting them with accurate examples.

Standard 4

WRITING: Process

- 6.4.1 Discuss ideas for writing, keep a list or notebook of ideas, and use graphic organizers to plan writing.
- 6.4.2 Choose the form of writing that best suits the intended purpose.
- 6.4.4 Use a variety of effective organizational patterns, including comparison and contrast, organization by categories, and arrangement by order of importance or climactic order.
- 6.4.5 Use note-taking skills.
- 6.4.6 Use organizational features of electronic text (on computers), such as bulletin boards, databases, keyword searches, and e-mail addresses, to locate information.
- 6.4.7 Use a computer to compose documents with appropriate formatting by using word processing skills and principles of design, including margins, tabs, spacing, columns, and page orientation.
- 6.4.8 Review, evaluate, and revise writing for meaning and clarity.
- 6.4.9 Edit and proofread one's own writing, as well as that of others, using an editing checklist or set of rules, with specific examples of corrections of frequent errors.
- 6.4.10 Revise writing to improve the organization and consistency of ideas within and between paragraphs.

Standard 5

WRITING: Applications (Different Types of Writing and Their Characteristics)

- 6.5.2 Write descriptions, explanations, comparison and contrast papers, and problem and solution essays that:
 - State the thesis (position on the topic) or purpose.
 - Explain the situation.
 - Organize the composition clearly.
 - Offer evidence to support arguments and conclusions.
- 6.5.3 Write research reports that:
 - Pose relevant questions that can be answered in the report.
 - Support the main idea or ideas with facts, details, examples, and explanations from multiple authoritative sources; such as speakers, newspapers and magazines, reference books, and online information searches.
 - Include a bibliography.

- 6.5.6 Use varied word choices to make writing interesting.
- 6.5.7 Write for different purposes and to a specific audience or person, adjusting tone and style as necessary.

Standard 6

WRITING: English Language Conventions

- 6.6.1 Use simple, compound, and complex sentences; use effective coordination and subordination of ideas, including both main ideas and supporting ideas in single sentences, to express complete thoughts.
- Simple sentence: sentences with one subject and verb such as The pine tree is native to many parts of America.
 - Compound sentence: sentences with two equal clauses such as The giraffe has a long neck and long legs, but it is a very graceful animal.
 - Complex sentence: sentences that include one main clause and at least one subordinate clause such as I just sat at my desk, not knowing what to do next, although others around me were writing furiously.
- 6.6.2 Identify and properly use indefinite pronouns (*all, another, both, each, either, few, many, none, one, other, several, some*), present perfect (*have been, has been*), past perfect (*had been*), and future perfect verb tenses (*shall have been*); ensure that verbs agree with compound subjects.
- Indefinite pronouns: Each should do his or her work.
 - Indefinite pronouns: Many were absent today.
 - Correct verb agreement: Todd and Amanda were chosen to star in the play.
 - Incorrect verb agreement: Todd and Amanda was chosen to star in the play.
- 6.6.3 Use colons after the salutation (greeting) in business letters (*Dear Sir:*), semicolons to connect main clauses (*The girl went to school; her brother stayed home.*), and commas before the conjunction in compound sentences (*We worked all day, but we didn't complete the project.*).
- 6.6.4 Use correct capitalization.
- 6.6.5 Spell correctly frequently misspelled words (*their/they're/there, loose/lose/loss, choose/chose, through/threw*).

Standard 7

LISTENING AND SPEAKING: Skills, Strategies, and Applications

- 6.7.3 Restate and carry out multiple-step oral instructions and directions.
- 6.7.5 Emphasize important points to assist the listener in following the main ideas and concepts.
- 6.7.6 Support opinions with researched, documented evidence and with visual or media displays that use appropriate technology
- 6.7.7 Use effective timing, volume, tone, and alignment of hand and body gestures to sustain audience interest and attention.
- 6.7.11 Deliver informative presentations that:
- Pose relevant questions sufficiently limited in scope to be completely and thoroughly answered.
 - Develop the topic with facts, details, examples, and explanations from multiple authoritative sources, including speakers, periodicals, and online information.

Grade 7

Standard 2

READING: Comprehension (Focus on Informational Materials)

7.2.2 Locate information by using a variety of consumer and public documents.

Standard 4

WRITING: Process

- 7.4.2 Create an organizational structure that balances all aspects of the composition and uses effective transitions between sentences to unify important ideas.
- 7.4.4 Use strategies of note-taking, outlining, and summarizing to impose structure on composition drafts.
- 7.4.5 Identify topics; ask and evaluate questions; and develop ideas leading to inquiry, investigation, and research.
- 7.4.6 Give credit for both quoted and paraphrased information in a bibliography by using a consistent format for citations.
- 7.4.7 Use a computer to create documents by using word processing skills and publishing programs; develop simple databases and spreadsheets to manage information and prepare reports.
- 7.4.8 Review, evaluate, and revise writing for meaning and clarity.
- 7.4.9 Edit and proofread one's own writing, as well as that of others, using an editing checklist or set of rules, with specific examples of corrections of frequent errors.
- 7.4.10 Revise writing to improve organization and word choice after checking the logic of the ideas and the precision of the vocabulary.

Standard 5

WRITING: Applications (Different Types of Writing and Their Characteristics)

- 7.5.3 Write research reports that:
 - Pose relevant and focused questions about the topic.
 - Communicate clear and accurate perspectives on the subject.
 - Include evidence and supporting details compiled through the formal research process, including use of a card catalog, *Reader's Guide to Periodical Literature*, a computer catalog, magazines, newspapers, dictionaries, and other reference books.
 - Document sources with reference notes and a bibliography.
- 7.5.5 Write summaries of reading materials that:
 - Include the main ideas and most significant details.
 - Use the student's own words, except for quotations.
 - Reflect underlying meaning, not just the superficial details.
- 7.5.6 Use varied word choices to make writing interesting and more precise.
- 7.5.7 Write for different purposes and to a specific audience or person, adjusting style and tone as necessary.

Standard 6

WRITING: English Language Conventions

- 7.6.1 Properly place modifiers (words or phrases that describe, limit, or qualify another word) and use the active voice (sentences in which the subject is doing the action) when wishing to convey a livelier effect.
 - Clear: She left the book, which she bought at the bookstore, on the table.
 - Unclear: She left the book on the table, which she bought at the bookstore.
 - Active voice: The man called the dog.
 - Passive voice: The dog was called by the man.
- 7.6.3 Make clear references between pronouns and antecedents by placing the pronoun where it shows to what word it refers.
 - Clear: Chris said to Jacob, "You will become a great musician."
 - Confusing: Chris told Jacob that he would become a great musician.

- 7.6.5 Demonstrate appropriate English usage (such as pronoun reference).
- 7.6.6 Identify and correctly use hyphens (-), dashes (—), brackets ([]), and semicolons (;).
- 7.6.7 Demonstrate the correct use of quotation marks and the use of commas with subordinate clauses.
- 7.6.8 Use correct capitalization.

Standard 7: LISTENING AND SPEAKING: Skills, Strategies, and Applications

- 7.7.3 Organize information to achieve particular purposes and to appeal to the background and interests of the audience.
- 7.7.4 Arrange supporting details, reasons, descriptions, and examples effectively.
- 7.7.5 Use speaking techniques — including adjustments of tone, volume, and timing of speech; enunciation (clear speech); and eye contact — for effective presentations.
- 7.7.9 Deliver oral summaries of articles and books that:
 - Include the main ideas and the most significant details.
 - State ideas in own words, except for when quoted directly from sources.
 - Demonstrate a complete understanding of sources, not just superficial details.
- 7.7.10 Deliver research presentations that:
 - Pose relevant and concise questions about the topic.
 - Provide accurate information on the topic.
 - Include evidence generated through the formal research process, including the use of a card catalog, *Reader's Guide to Periodical Literature*, computer databases, magazines, newspapers, and dictionaries.
 - Cite reference sources appropriately.

Grade 8

Standard 2

READING: Comprehension (Focus on Informational Materials)

- 8.2.5 Use information from a variety of consumer and public documents to explain a situation or decision and to solve a problem.

Standard 4

WRITING: Process

- 8.4.2 Create compositions that have a clear message, a coherent thesis (a statement of position on the topic), and end with a clear and well-supported conclusion.
- 8.4.3 Support theses or conclusions with analogies (comparisons), paraphrases, quotations, opinions from experts, and similar devices.
- 8.4.4 Plan and conduct multiple-step information searches using computer networks.
- 8.4.5 Achieve an effective balance between researched information and original ideas.
- 8.4.6 Use a computer to create documents by using word processing skills and publishing programs; develop simple databases and spreadsheets to manage information and prepare reports.
- 8.4.7 Review, evaluate, and revise writing for meaning and clarity.
- 8.4.8 Edit and proofread one's own writing, as well as that of others, using an editing checklist or set of rules, with specific examples of corrections of frequent errors.
- 8.4.9 Revise writing for word choice; appropriate organization; consistent point of view; and transitions among paragraphs, passages, and ideas.

Standard 5

WRITING: Applications (Different Types of Writing and Their Characteristics)

- 8.5.6 Write using precise word choices to make writing interesting and exact.
- 8.5.7 Write for different purposes and to a specific audience or person, adjusting tone and style as necessary.

Standard 6

WRITING: English Language Conventions

- 8.6.1 Use correct and varied sentence types (simple, compound, complex, and compound-complex) and sentence openings to present a lively and effective personal style.
- 8.6.2 Identify and use parallelism (use consistent elements of grammar when compiling a list) in all writing to present items in a series and items juxtaposed for emphasis.
 - Correct: Students having difficulty and needing help should stay after class.
 - Incorrect: Students having difficulty and who need help should stay after class.
- 8.6.3 Use subordination, coordination, noun phrases that function as adjectives (*These gestures - acts of friendship - were noticed but not appreciated.*), and other devices to indicate clearly the relationship between ideas.
- 8.6.4 Edit written manuscripts to ensure that correct grammar is used.
- 8.6.5 Use correct punctuation.
- 8.6.6 Use correct capitalization.
- 8.6.7 Use correct spelling conventions.

Standard 7

LISTENING AND SPEAKING: Skills, Strategies, and Applications

- 8.7.5 Use appropriate grammar, word choice, enunciation (clear speech), and pace (timing) during formal presentations.
- 8.7.12 Deliver research presentations that:
 - Define a thesis (a position on the topic).
 - Research important ideas, concepts, and direct quotations from significant information sources and paraphrase and summarize important perspectives on the topic.
 - Use a variety of research sources and distinguish the nature and value of each.
 - Present information on charts, maps, and graphs.

Mathematics

Grade 6

Standard 2

Computation

- 6.2.1 Add and subtract positive and negative integers.
- 6.2.2 Multiply and divide positive and negative integers.
- 6.2.3 Multiply and divide decimals.
- 6.2.8 Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips.

Standard 3

Algebra and Functions

- 6.3.2 Write and use formulas with up to three variables to solve problems.
- 6.3.3 Interpret and evaluate mathematical expressions that use grouping symbols such as parentheses.
- 6.3.4 Use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations.

Standard 7

Problem Solving

- 6.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
- 6.7.3 Decide when and how to break a problem into simpler parts.
- 6.7.4 Apply strategies and results from simpler problems to solve more complex problems.
- 6.7.9 Make precise calculations and check the validity of the results in the context of the problem.
- 6.7.10 Decide whether a solution is reasonable in the context of the original situation.
- 6.7.11 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.

Grade 7

Standard 2

Computation

- 7.2.2 Calculate the percentage increase and decrease of a quantity.
- 7.2.3 Solve problems that involve discounts, markups, and commissions.

Standard 3

Algebra and Functions

- 7.3.1 Use variables and appropriate operations to write an expression, a formula, an equation, or an inequality that represents a verbal description.
- 7.3.5 Solve an equation or formula with two variables for a particular variable.

Standard 6

Data Analysis and Probability

- 7.6.1 Analyze, interpret, and display data in appropriate bar, line, and circle graphs and stem-and-leaf plots and justify the choice of display.
- 7.6.2 Make predictions from statistical data.
- 7.6.4 Analyze data displays, including ways that they can be misleading. Analyze ways in which the wording of questions can influence survey results.

Standard 7

Problem Solving

- 7.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
- 7.7.3 Decide when and how to divide a problem into simpler parts.
- 7.7.4 Apply strategies and results from simpler problems to solve more complex problems.
- 7.7.10 Make precise calculations and check the validity of the results in the context of the problem.
- 7.7.11 Decide whether a solution is reasonable in the context of the original situation.
- 7.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.

Grade 8

Standard 2

Computation

- 8.2.2 Solve problems by computing simple and compound interest.
- 8.2.3 Use estimation techniques to decide whether answers to computations on a calculator are reasonable.

Standard 7

Problem Solving

- 8.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
- 8.7.3 Decide when and how to divide a problem into simpler parts.
- 8.7.4 Apply strategies and results from simpler problems to solve more complex problems.
- 8.7.10 Make precise calculations and check the validity of the results in the context of the problem.
- 8.7.11 Decide whether a solution is reasonable in the context of the original situation.
- 8.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.

Science

Standard 2

Scientific Thinking

- 6.2.2 Use technology, such as calculators or computer spreadsheets, in analysis of data.
- 6.2.3 Select tools, such as cameras and tape recorders, for capturing information.
- 6.2.5 Organize information in simple tables and graphs and identify relationships they reveal. Use tables and graphs as examples of evidence for explanations when writing essays or writing about lab work, fieldwork, etc.
- 6.2.6 Read simple tables and graphs produced by others and describe in words what they show.
- 6.2.7 Locate information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.
- 6.2.8 Analyze and interpret a given set of findings, demonstrating that there may be more than one good way to do so.

Standard 5

The Mathematical World

- 6.5.4 Demonstrate how graphs may help to show patterns, such as trends, varying rates of change, gaps, or clusters, which can be used to make predictions.

Standard 7

Common Themes

- 6.7.1 Describe that a system, such as the human body, is composed of subsystems.

Grade 7

Standard 1

The Nature of Science and Technology

- 7.1.10 Identify ways that technology has strongly influenced the course of history and continues to do so.
- 7.1.11 Illustrate how numbers can be represented using sequences of only two symbols, such as 1 and 0 or on and off, and how that affects the storage of information in our society.

Standard 2

Scientific Thinking

- 7.2.1 Find what percentage one number is of another and figure any percentage of any number.
- 7.2.7 Use formulas to calculate the circumferences and areas of rectangles, triangles, and circles, and the volumes of rectangular solids.

Grade 8

Standard 2

Scientific Thinking

- 8.2.4 Use technological devices, such as calculators and computers, to perform calculations.
- 8.2.5 Use computers to store and retrieve information in topical, alphabetical, numerical, and keyword files and create simple files of students' own devising.
- 8.2.6 Write clear, step-by-step instructions (procedural summaries) for conducting investigations, operating something, or following a procedure.

Grade 8

Standard 4

Economics

- 8.4.5 Analyze contributions of entrepreneurs, inventors, and other key individuals in the development of the United States economy.